Web Mapping with SS

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What is geospatial data?

- data or information identifies the geographic location of features on Earth
- natural or constructed features
- usually stored as coordinates and topology
- often accessed, manipulated or analyzed through Geographic Information Systems (GIS)

Spatial analysis

One of the first map-based spatial analysis

- Created in 1854
- Map by Dr. John Snow
- London cholera cases

Geometry – Data Types

Vector datasets

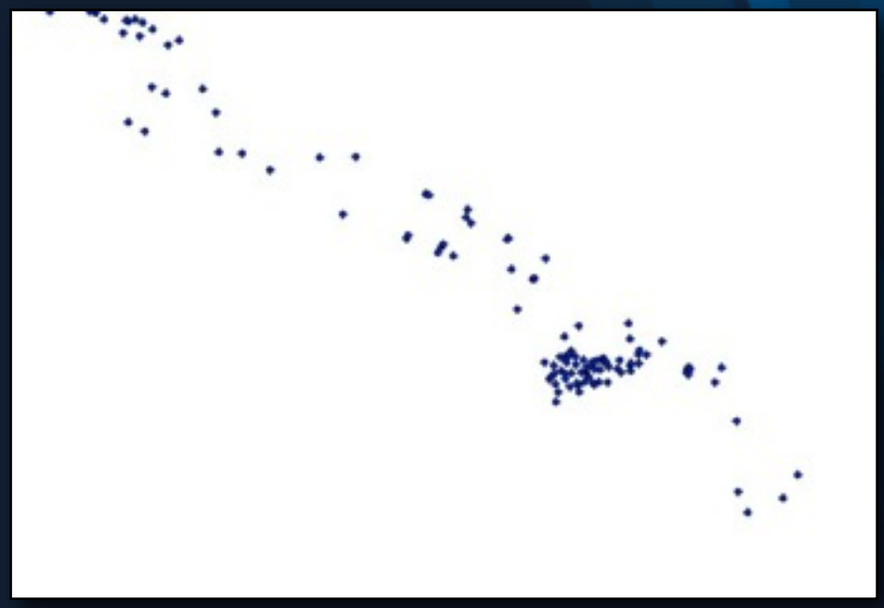
- Points, lines, polygons

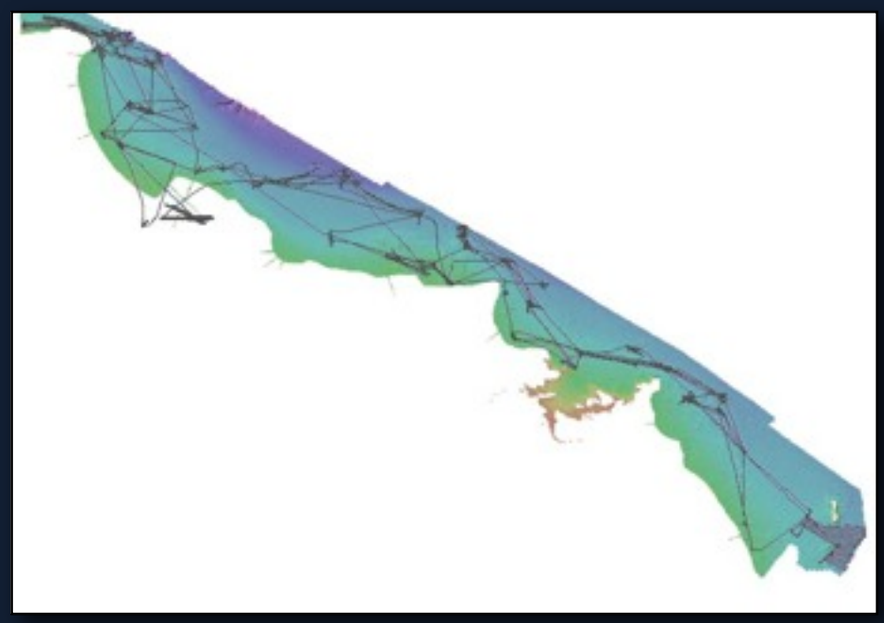
Raster datasets

- Imagery, coverage

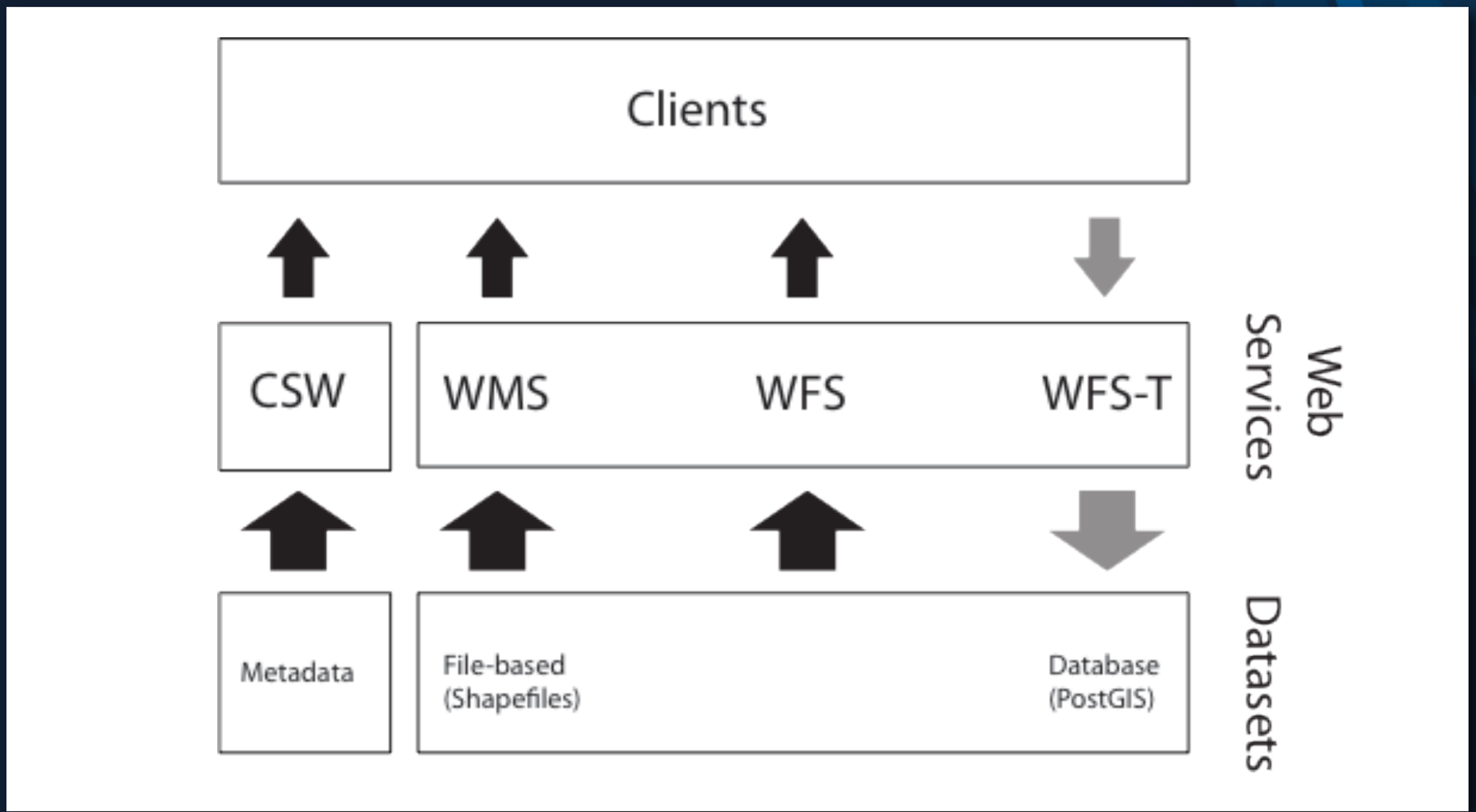
Geometries stored with

- Content, attributes,
- Coordinates, data projection





Map Sources – How to publish them?



Map Sources – Web Services

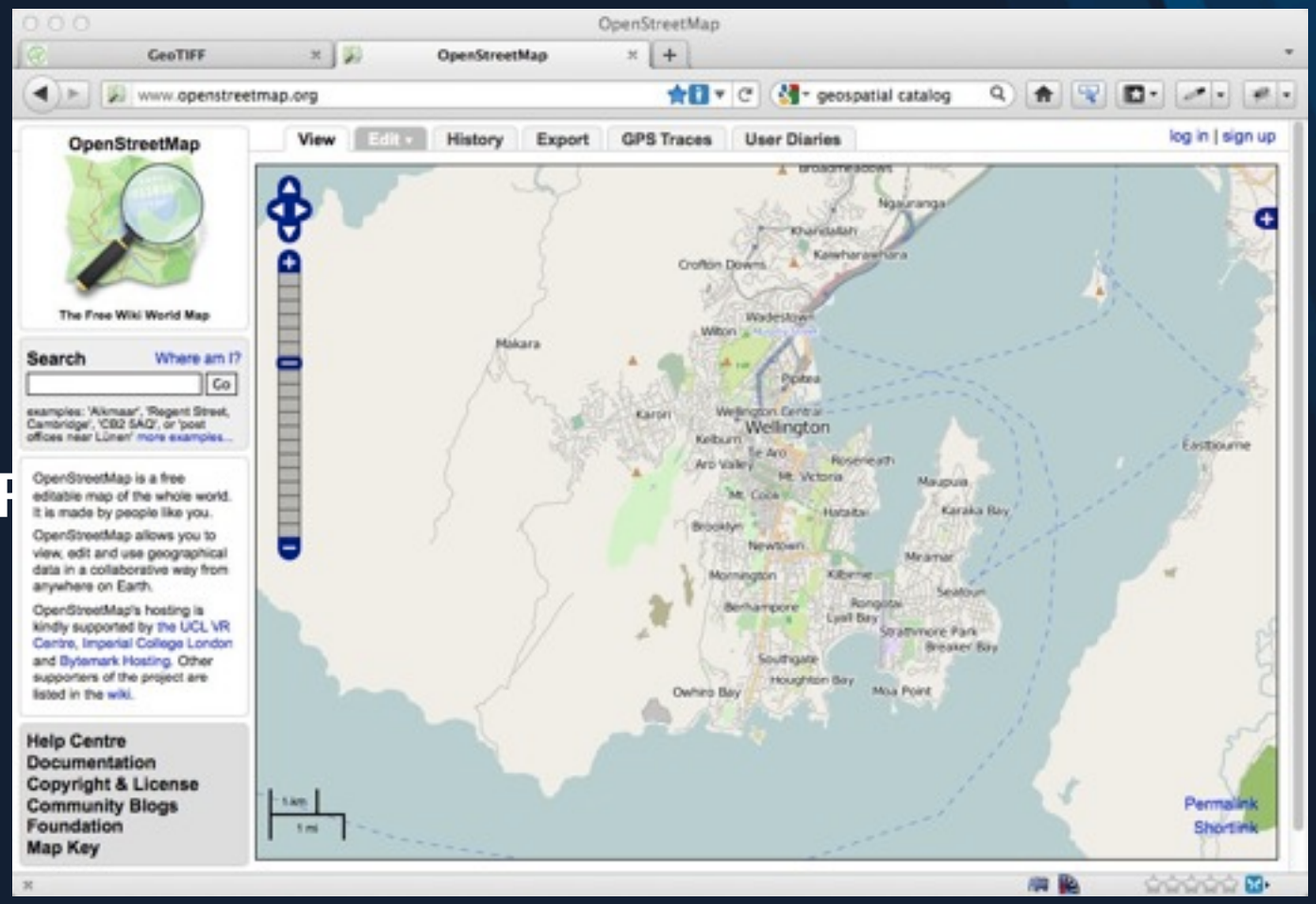
Open GeoSpatial Consortium (ISO/TC 211)

- Web Map Services (WMS)
- Web Feature Services (WFS)
- Web Services for Catalog
- GML, KML
- and others
- Web Map Service Tile Cached (WMS-C)

Map Layers

Context Layers

- Google Maps
- OpenStreetMap
- Bing Maps
- Vendor map services (i.e., ESR

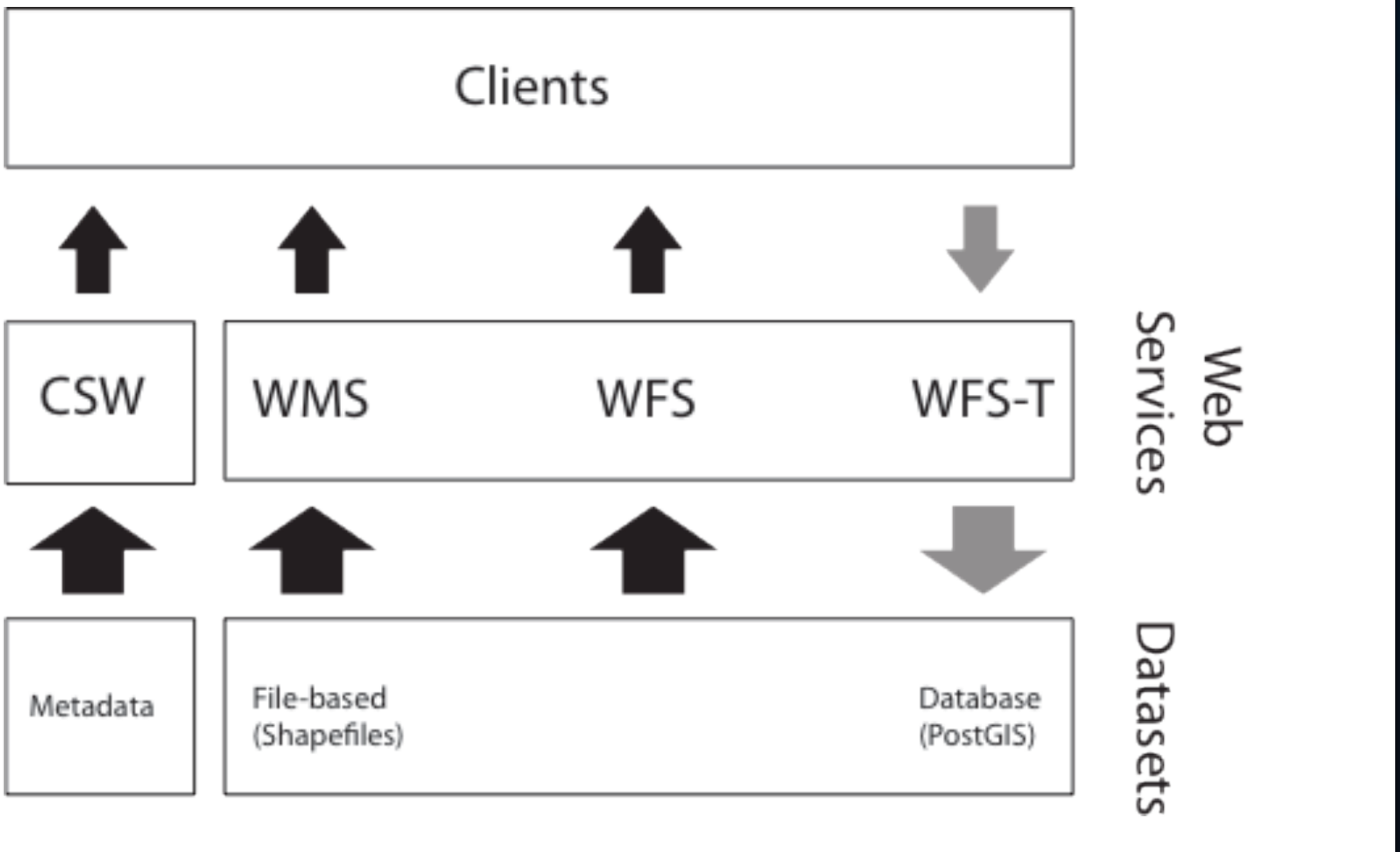


Open Source projects

OSGeo project stack:

- UMN Mapserver
- GeoServer
- GeoWebCache
- PostgreSQL / PostGIS
- GeoNetwork
- OpenLayers
- and many more

Open Source projects



Bring it all together

SilverStripe CMS

SilverStripe GeoViewer

- Manage map and configure OpenLayers with the CMS
- Add mapping capability to any page type
- Support open standards and provide a re-usable solution
- Ability to participate in NZ GeoSpatial Strategy

SilverStripe GeoCatalog

- Manage metadata and make it easy accessible for users
  - human beings, as well as other services

SilverStripe GeoViewer

Used in several production sites

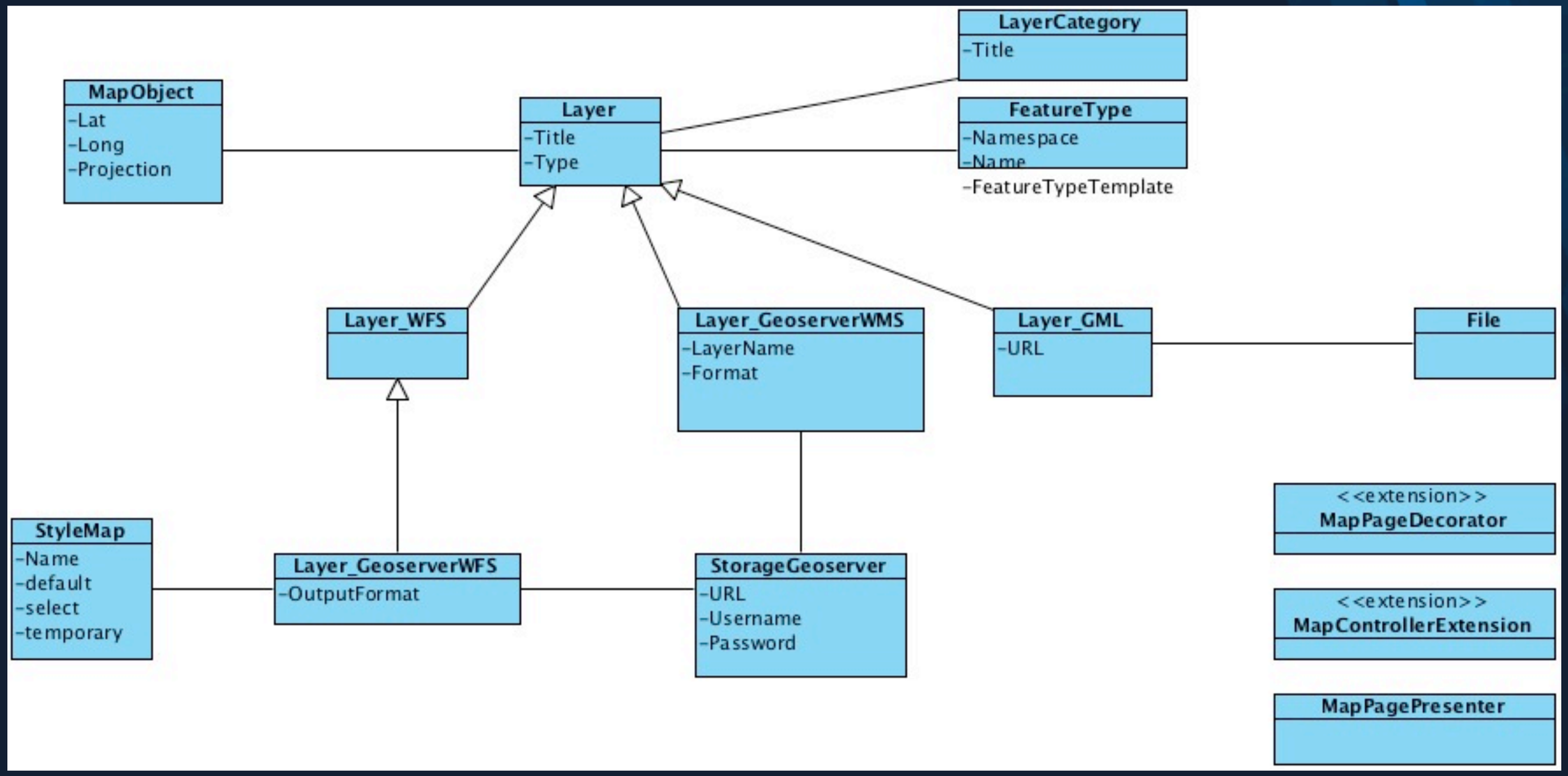
- OS2020 (http://www.os2020.org.nz/)
  - Integrating: UMN Mapserver, ESRI ArcGIS, PostgreSQL/PostGIS, GeoNetwork, custom web services.
- Marine Biosecurity Porthole Portal (http://marinebiosecurity.org.nz/)
  - Integrating: UMN Mapserver, PostgreSQL/PostGIS, GeoNetwork
- LINZ Metadata catalog (http://geodata.govt.nz/)
  - Integrating: GeoNetwork, OpenStreetMap
- Australian government department website
  - Integrating: PostgreSQL/PostGIS, GeoServer

SilverStripe GeoViewer

Fully customisable module, supported various web services

- OGC WMS and WFS (GeoServer custom), and flat files (KML,GML)
- Vendor map services (Google Maps, OpenStreetMap, others)
- Vector Style manageable via the CMS backend
- Vector Info bubble customisable
- Manage Layer groups and categories
- Extendable for any page time
- Embrace excellent user experience, custom business logic create fast apps.
- Separate data providers from website managers and content editors

GeoViewer - Domain Model



GeoViewer – Installation

Install GeoServer locally on port 8080

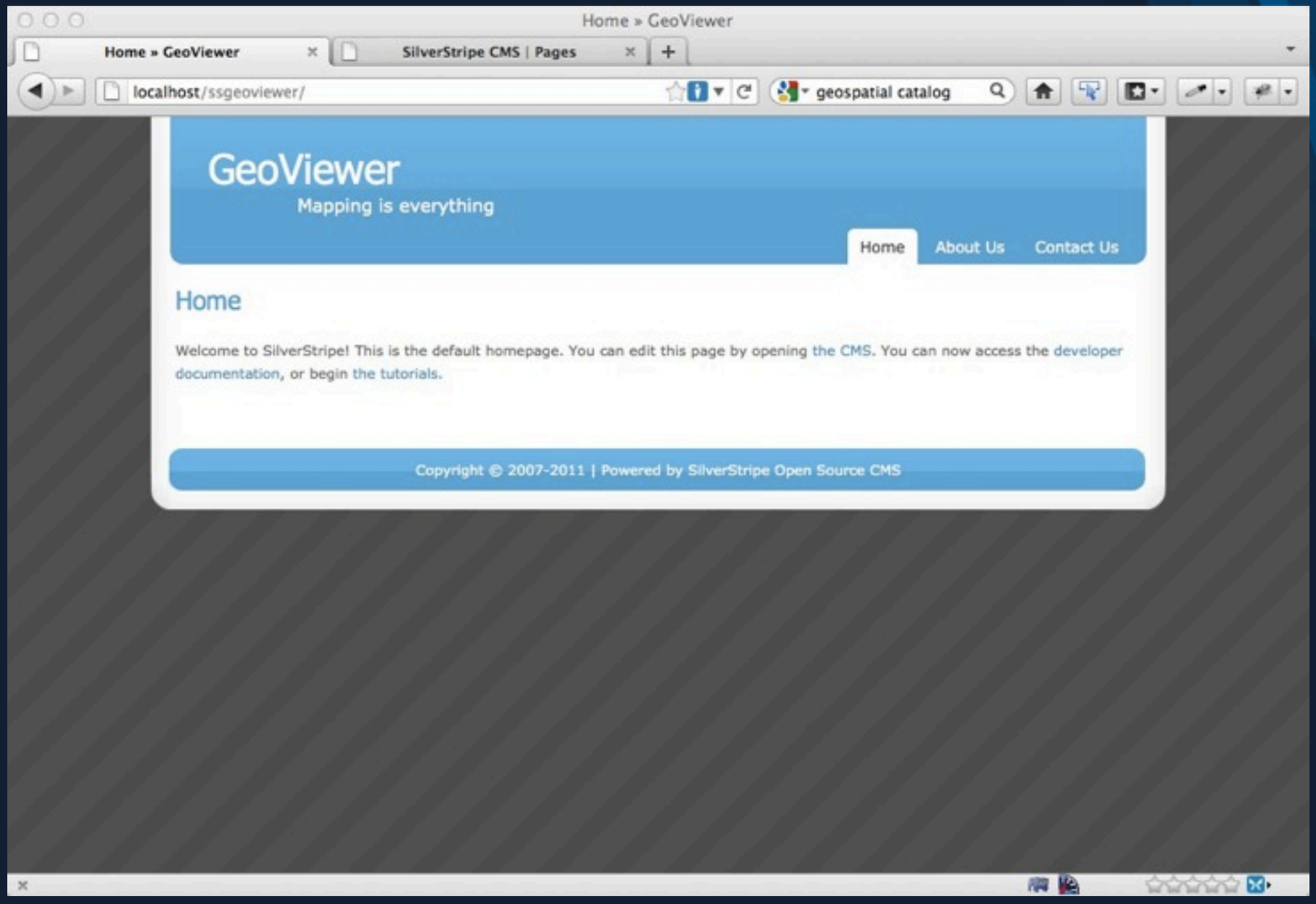
Check out your SS 2.4 project with Blackcandy theme

```
git clone git@github.com:silverstripe-labs/silverstripe-commandpattern.git commandpattern
git clone git@github.com:silverstripe-labs/silverstripe-geoviewer.git geoviewer
```

run dev/build

log into CMS and pre-view demo pages.

GeoViewer - Backend / Frontend



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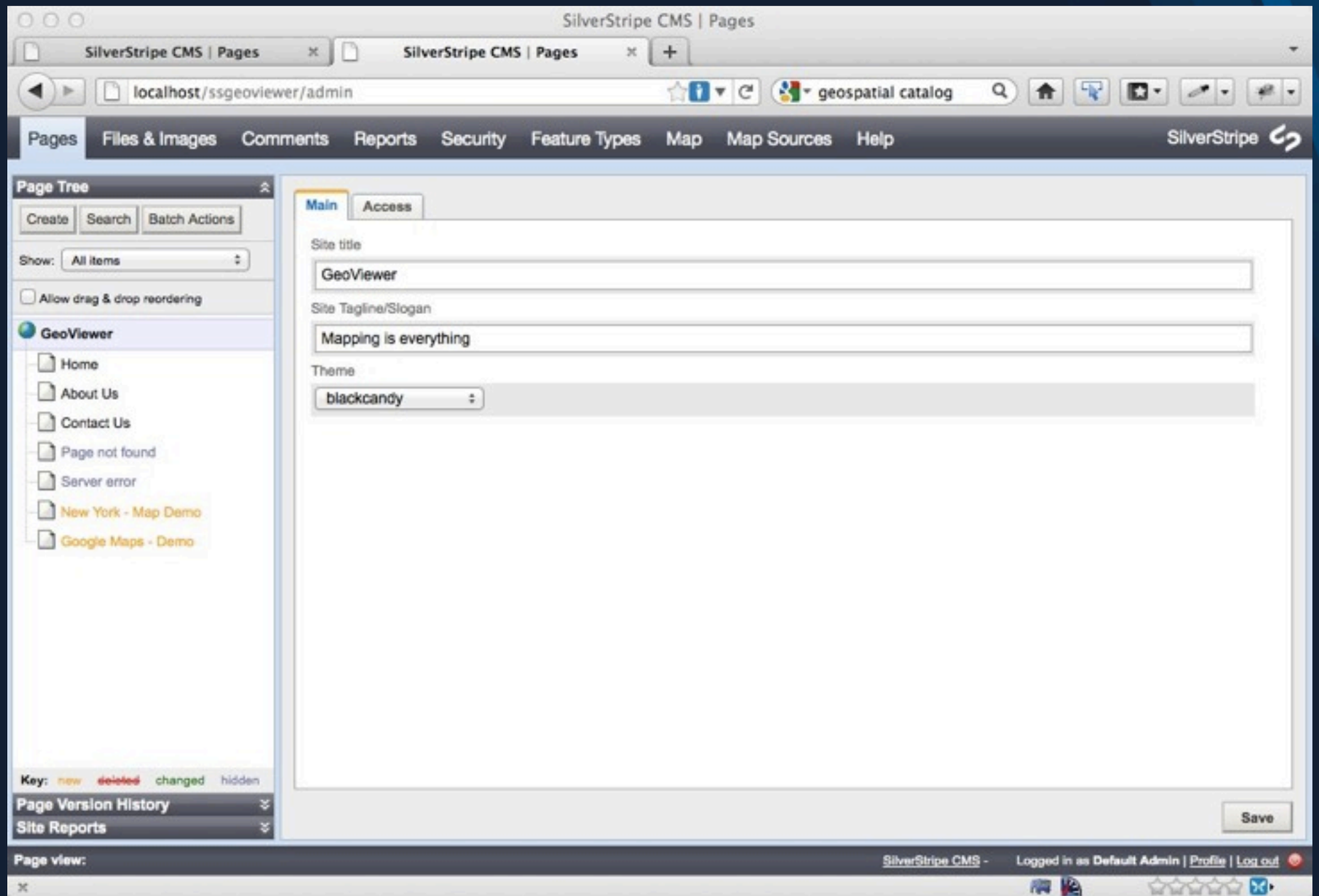

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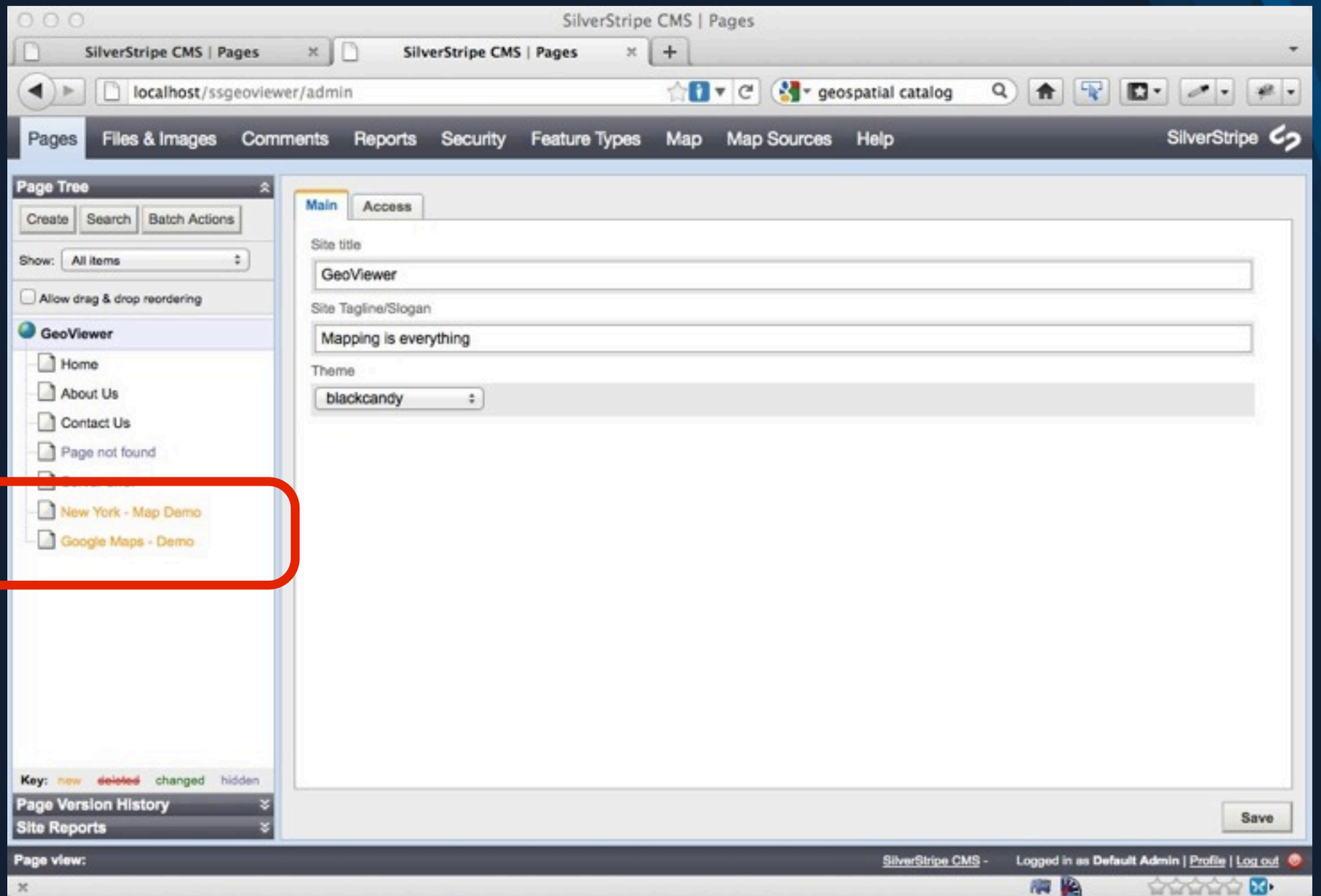

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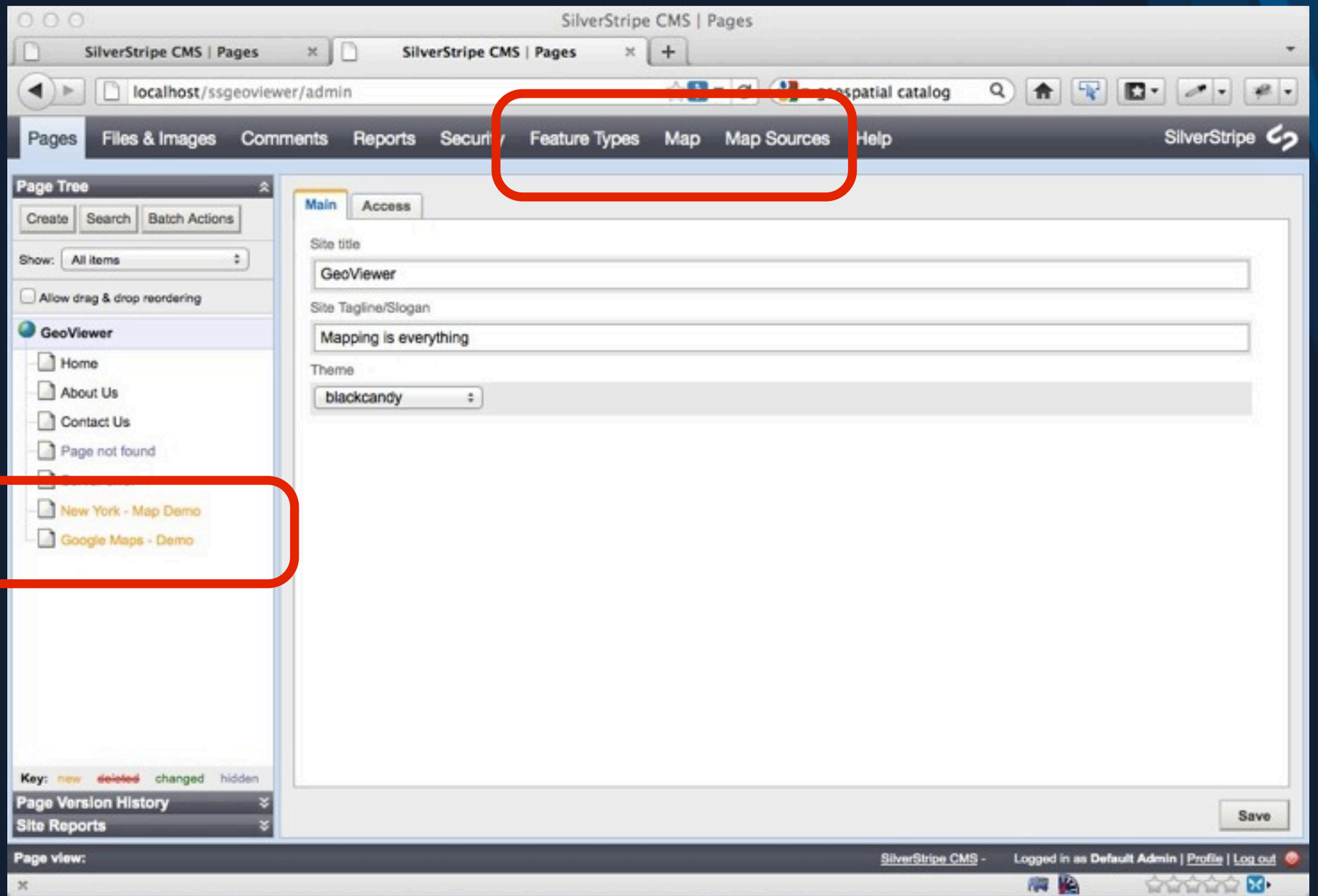

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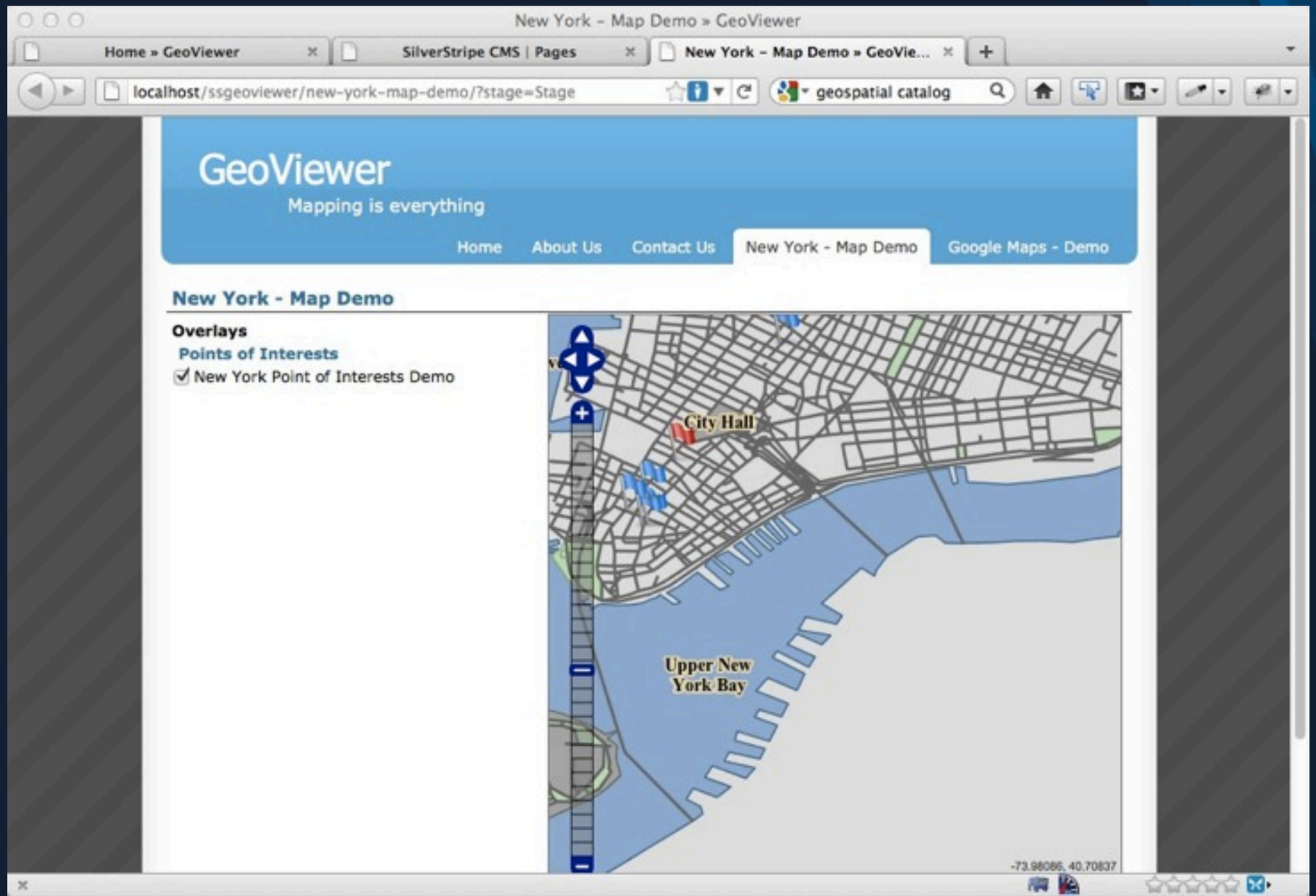

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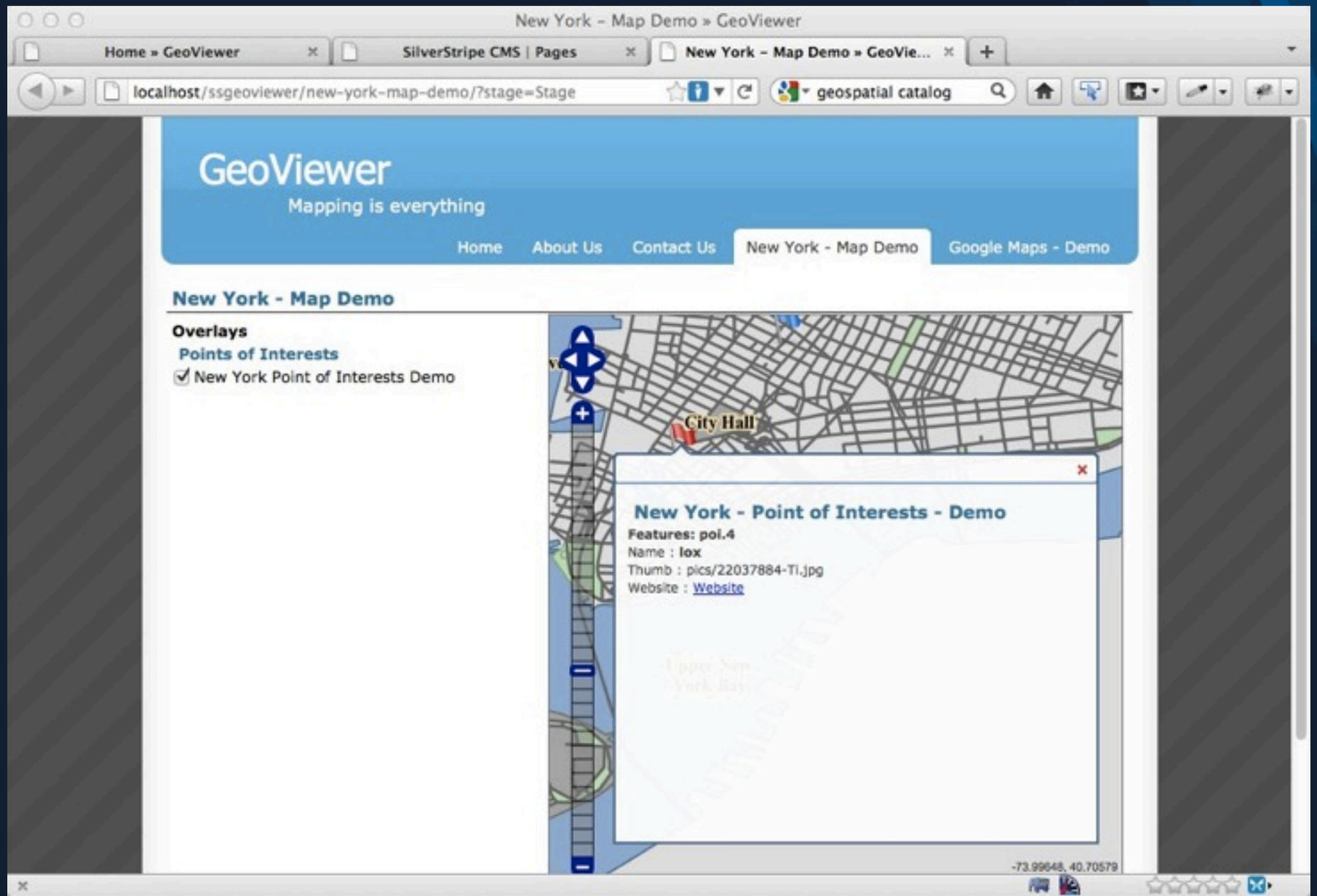

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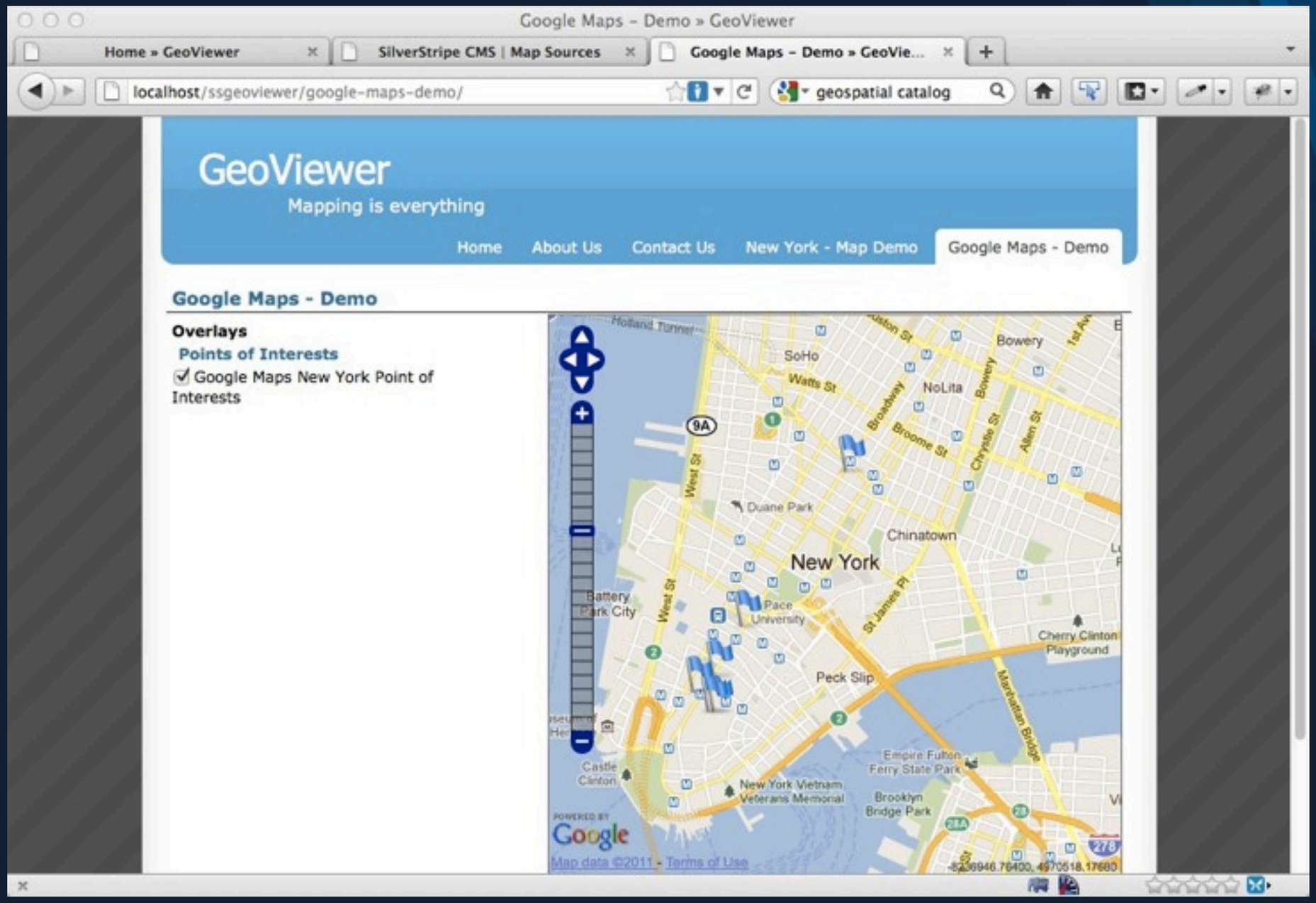

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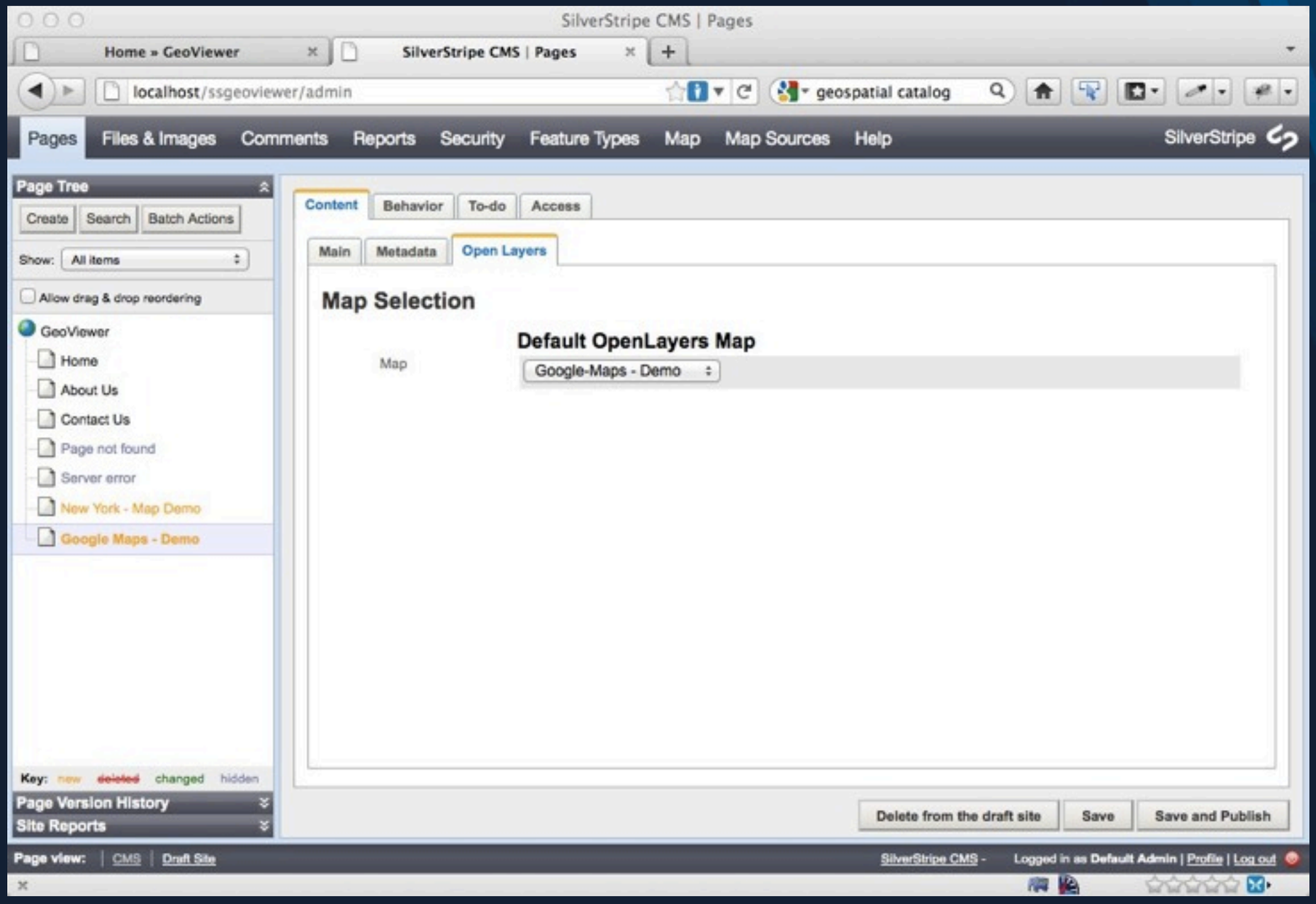

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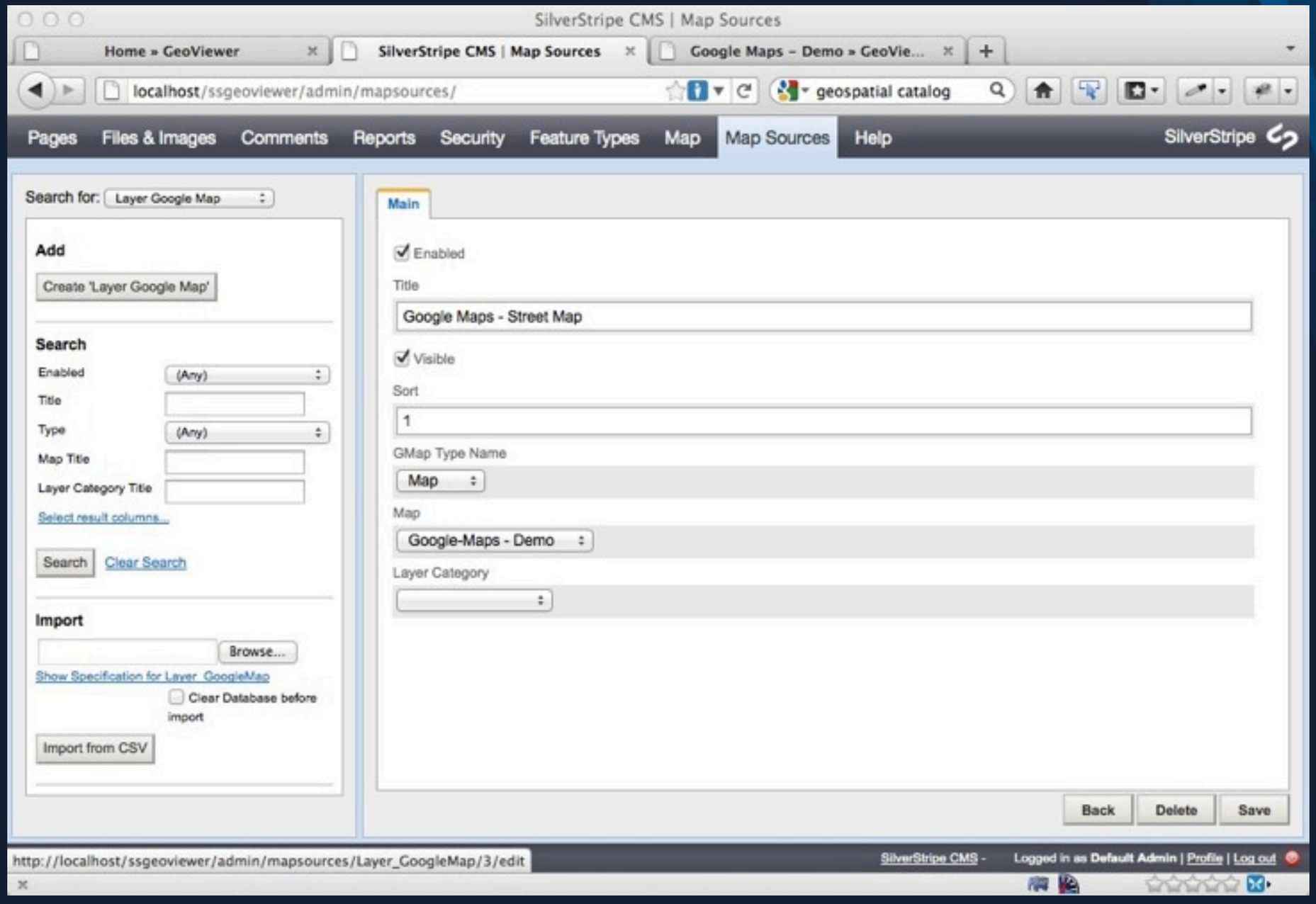

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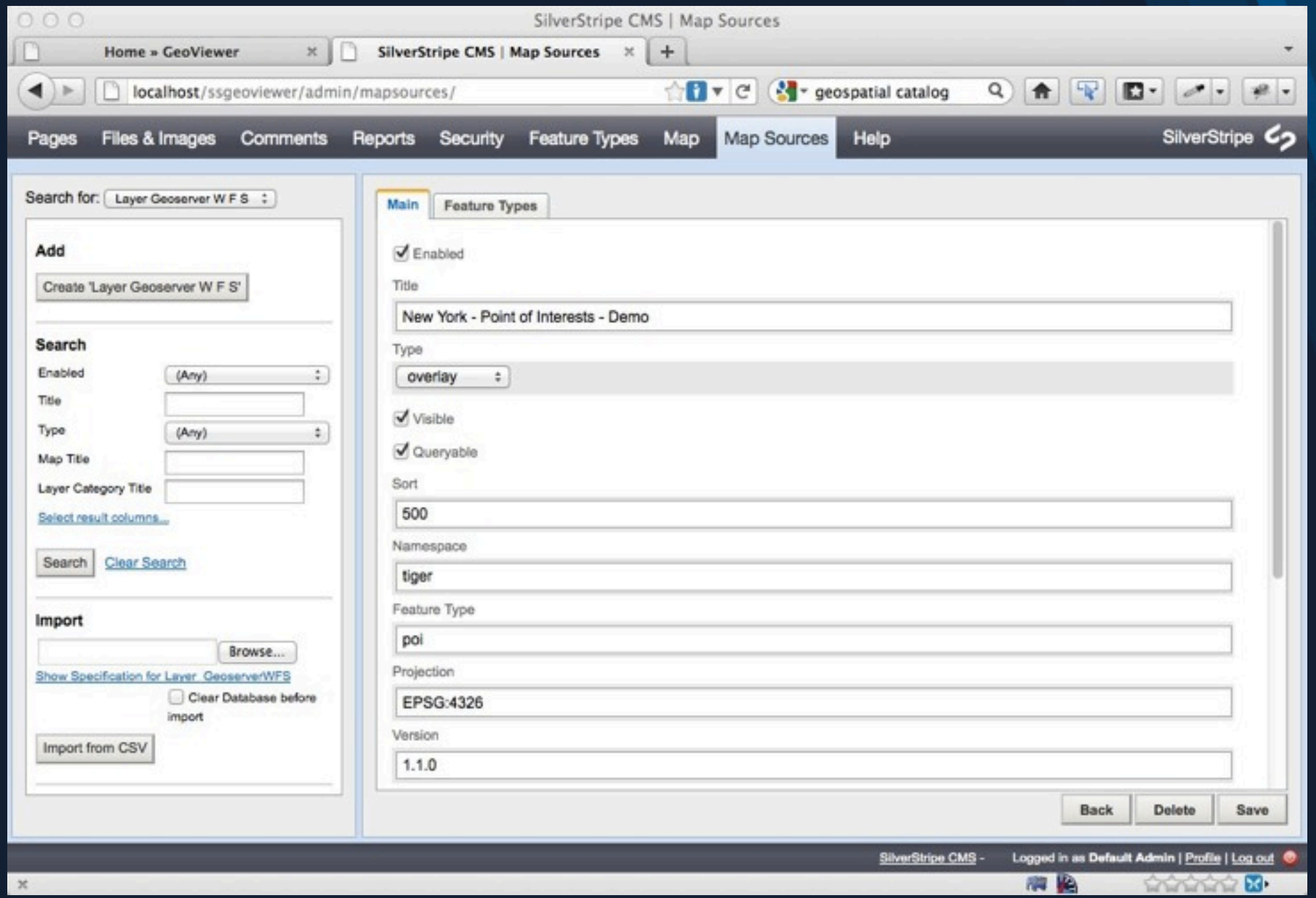

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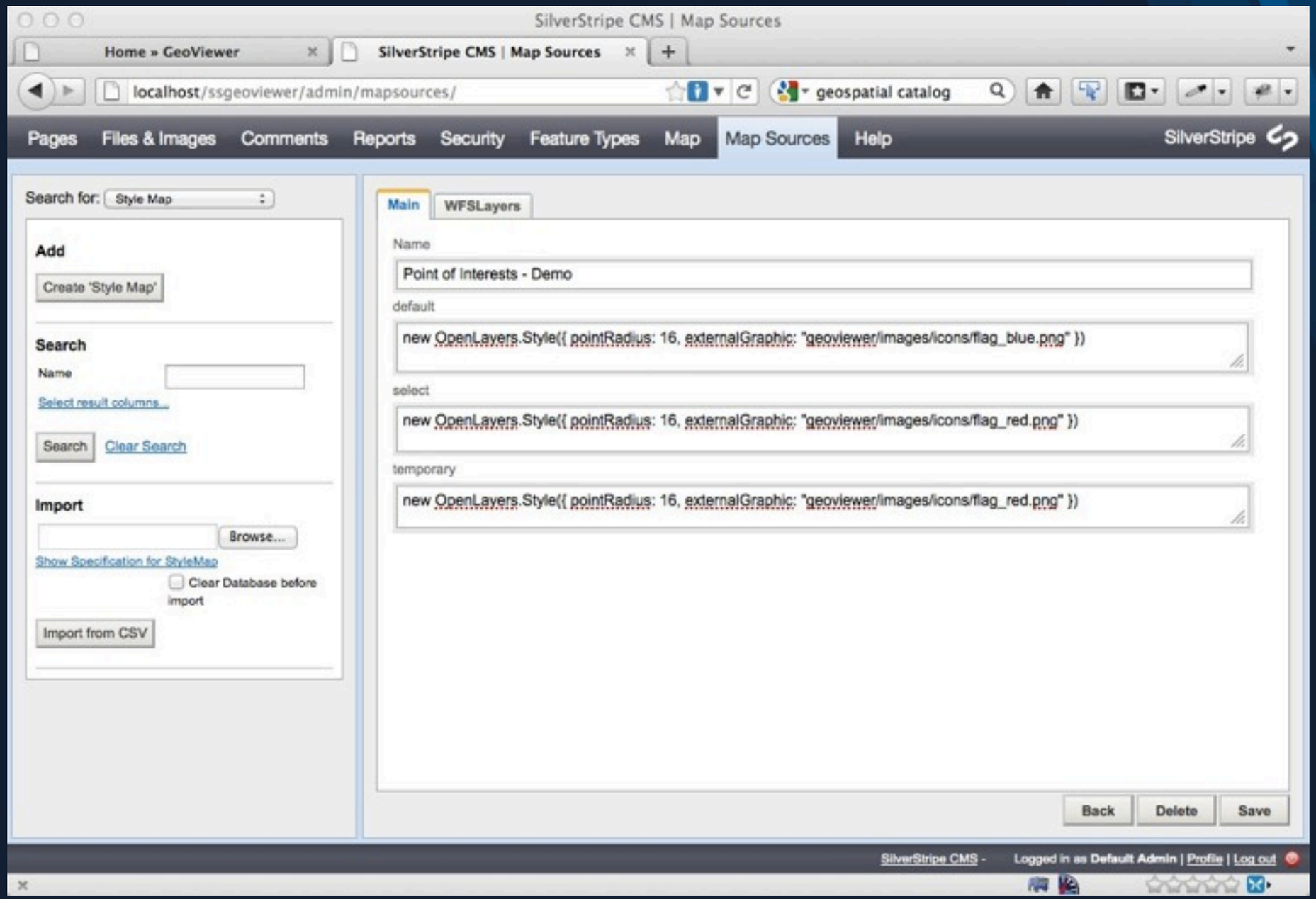

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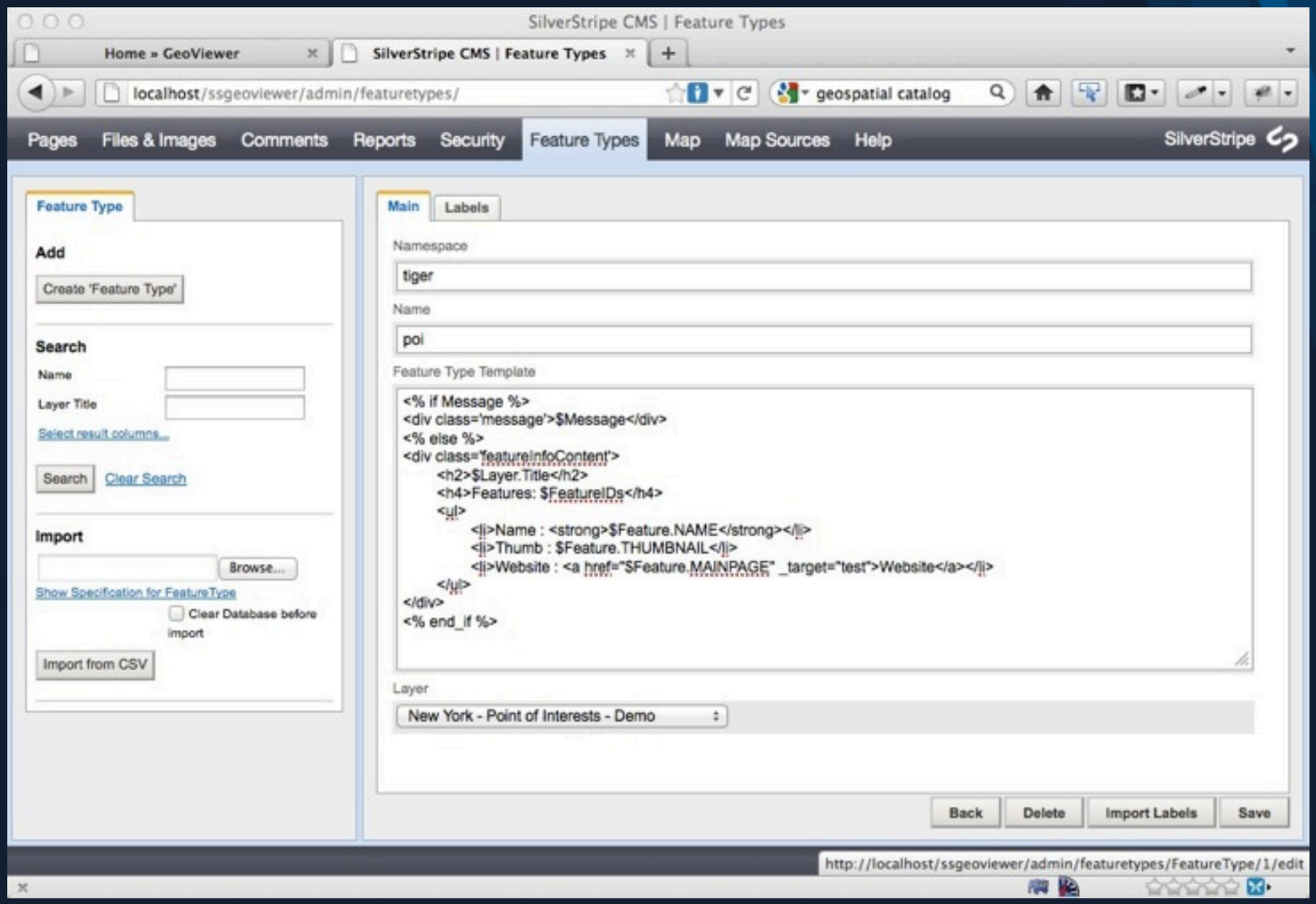

GeoViewer - Configure

Apply the map to any page-type:

```
DataObject::add_extension('MapPage', 'MapPageDecorator');

Object::add_extension('MapPage_Controller', 'MapControllerExtension');
```

Configure proxy (for WFS request):

```
Proxy_Controller::set_allowed_host(array('localhost:8080','localhost'));
```

Manage all layer connectivity via CMS

Custom ‘MapWrapper.js’ to change OpenLayers behaviour

Upload KML/GML files via assets

GeoViewer – Setup Template

In your PageType template, define the map container:

```
<h2>$Title</h2>

$Content

<hr />

<!-- This example tempate fits with black-candy well-->

<div id="layerlist" style="width:300px;height:400px;float:left">

<% include LayerList %>

</div>

<div id="map" class="olMap initmap" style=""></div>
```

GeoViewer - What is next?

- Upgrade to OpenLayers 2.11 (mobile support)
- Security management
- Support Queries (i.e. search/filter) capabilities
- Integration of UMN Mapserver
- Integrated backend map builder/preview
- Versioning of the data model
- WFS-T support (online web-mapping editor)
- Map query enhancements (KML info tool, WMS/WFS info tool)

In terms of Geo-spatial - What is next?

SilverStripe GeoCatalog

- Manage metadata and make metadata accessible via Open Standards

SilverStripe GeoSpatial capabilities

- Enable SilverStripe Framework to support OGC SimpleFeature

SilverStripe Location Based Services capabilities

- Enable SilverStripe to support Location Based Services (OGC OpenLBS)
- Embrace mobile application development

Thank you!

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